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EXAMINER
TRUONG, CAMQUY

ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *17 December 2008*.

2a) ☒ This action is **FINAL**.   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-29* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-29* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1.   Claims 1-29 are presented for examination.

2.   The drawings filed on 12/22/2003 are acceptable.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b),
> by another filed in the United States before the invention by the applicant for patent or (2) a
> patent granted on an application for patent by another filed in the United States before the
> invention by the applicant for patent, except that an international application filed under the treaty
> defined in section 351(a) shall have the effects for purposes of this subsection of an application
> filed in the United States only if the international application designated the United States and
> was published under Article 21(2) of such treaty in the English language.

4.   Claims 1-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Lim et

al. (U.S. 6,795966 B1).

5.   As to claim 1, Lim taught the invention as claimed including computer accessible

medium encoded with instructions which, when executed:

   replicate a checkpoint segment from a first local storage of a first node to at least

one other node (whereby the state of the source virtual machine of the checkpoint

segment is replicated in the secondary virtual machines, col. 32, lines 44-45/ a first

virtual machine monitor may extract and transmit the state vector (checkpoint) over to a second virtual machine monitor, col. 21, lines 54-59), wherein the checkpoint segment is stored into the first local storage by an application (Virtual Machine i(j) be the checkpoint of virtual machine I, the state vector for the state of Virtual Machine I at checkpoint j is saved in storage by the virtual machine monitor which include the virtual machine is executing on, col. 17, lines 26-28; col. 20, lines 22-25), and wherein the checkpoint segment comprises a state of the application (each checkpoint comprising a list of total state of the virtual machine, col. 6, lines 49-52; col. 12, lines 29-32); and

load a copy of the checkpoint segment from the at least one other node into a second local storage of a second node responsive to a request (the second virtual machine monitor that receives and restores the state vector into a second virtual machine, col. 21, lines 59-61/ user of virtual machine would then be issuing a restoration signal, col. 26, lines 52-56) from the second node to load the copy (loading into at least one secondary virtual machine selected among the plurality of virtual machine, a checkpoint corresponding to the total state of different one of the virtual machines, whereby the state of the source virtual machine is replicated in the secondary virtual machines, col. 32, lines 34-44), wherein the second node is to execute the application (starting execution of each secondary virtual machine from the checkpoint state of the source virtual machine, col. 32, lines 44-45)..

6.   As to claim 2, Lim teaches the checkpoint segment is identified by a checkpoint segment name that is unique within a cluster including the first node and the second

node (the snapshot is implemented including an identifier called an epoch number, col. 2, lines 46).

7.   As to claims 3 and 5, Lim teaches the at least one other node comprises two or more other nodes (col. 2, lines 41-46; col. 27, line 65 – col. 28, line 11).

8.   As to claim 4, Lim teaches the request to load the copy is issued by the application executing on the second node (the snapshot is implemented including an identifier called an epoch number, col. 2, lines 46).

9.   As to claim 6, Lim teaches the instructions (virtual machine instruction, col. 6, lines 40-45), when executed, retrieve the copy from one of the at least one other node responsive to the request (the snapshot is implemented including an identifier called an epoch number, col. 2, lines 46).

10.   As to claim 7, Lim teaches the at least one other node is configured to load the copy into a global storage, and wherein the instructions, when executed, retrieve the copy from the global storage responsive to the request (shared image, col. 22, lines 5-19).

11.   As to claim 8, Lim teaches the instructions, when executed, replicate the checkpoint segment by performing at least:

reading the checkpoint segment from the first local storage of the first node (state

of vector to be read, col. 11, lines 17-19; col. 13, lines 50-52); and

transmitting the checkpoint segment to the at least one other node (restored, col.

11, lines 17-19; col. 13, lines 52-53).

12.   As to claims 9-10, Lim teaches the instructions, when executed:

receive the checkpoint segment from the first node in the at least one other node

(loading into at least one secondary virtual machine selected among the plurality of

virtual machine, a checkpoint corresponding to the total state of different one of the

virtual machines, whereby the state of the source virtual machine is replicated in the

secondary virtual machines, col. 28, liens 44-50; col. 32, lines 34-44); and

store the checkpoint segment in the at least one other node (the state vector may

be transmitted directly over a transmission medium to a remote computer system that

receives and restores the state vector into another virtual machine, col. 28, lines 44-50).

13.   As to claim 11, Lim teaches the at least one other node is configured to load the

copy into a global storage, and wherein the instructions, when executed:

receive the checkpoint segment from the first node; and store the checkpoint

segment in the global storage (the state vector may be transmitted directly over a

transmission medium to a remote computer system that receives and restores the state

vector into another virtual machine, col. 11, lines 17-19; col. 28, lines 44-50).

14.   As to claim 12, Lim teaches the at least one other node is not capable of executing the application (col. 2, lines 9-12).

15.   As to claim 13, it is rejected for the same reason as claim 1.

16.   As to claim 14, it is rejected for the same reason as claim 3.

17.   As to claim 15, it is rejected for the same reason as claim 4.

18.   As to claim 16, it is rejected for the same reason as claim 5.

19.   As to claim 17, it is rejected for the same reason as claim 6.

20.   As to claim 18, it is rejected for the same reason as claim 7.

21.   As to claim 19, it is rejected for the same reason as claim 8.

22.   As to claim 20, it is rejected for the same reason as claim 9.

23.   As to claim 21, it is rejected for the same reason as claim 10.

24.   As to claim 22, it is rejected for the same reason as claim 11.

25.   As to claim 23, it is rejected for the same reason as claim 12.

26.   As to claim 24, it is rejected for the same reason as claim 1.

27.   As to claim 25, it is rejected for the same reason as claim 12.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

28.   Claims 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Lim et al. (U.S. 6,795966 B1) in view of Vert et al. (U.S. 6,360,331).

29.   As to claims 26 and 28, Lim does not explicitly teaches the application registering

the checkpoint segment; and recording a name of the checkpoint segment to access the

checkpoint segment for replicating responsive to the registering.

30.   However, Vert teaches the application registering the checkpoint segment (The

registry checkpoint data is then saved to the cluster quorum device 118.sub.2 as also

described above (CpSaveData), col. 12, lines 41-46 / the checkpoint manager 112, via

a snapshot mechanism 116, takes a snapshot of the listed subtree data and records the

snapshot as data 118.sub.1 -118.sub.m associated with that application 96 (e.g.,

snapshot data 118.sub.2) on the quorum device 57, col. 10, lines 7-32); and recording a

name of the checkpoint segment to access the checkpoint segment for replicating

responsive to the registering (the checkpoint manager 112, via a snapshot mechanism

116, takes a snapshot of the listed subtree data and records the snapshot as data

118.sub.1 -118.sub.m (name) associated with that application 96 (e.g., snapshot data

118.sub.2) on the quorum device 57, col. 10, lines 7-32).

31.   It would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify the teaching of Lim to incorporate the teaching of the

application registering the checkpoint segment; and recording a name of the checkpoint

segment to access the checkpoint segment for replicating responsive to the registering

as taught by Vert because this allow the failover of an application from one server (i.e.,

machine) to another automatic in response to a software or hardware failure on the first

machine by restore the checkpoint in the registry.

32.   As to claim 29, Vert teaches selecting the at least one other node to which the

checkpoint segment is to be replicated responsive to the registering (the checkpoint

manager 104 may cause the information to be replicated via GLUP or some other

communications mechanism to the other systems of the cluster, col. 11, lines 41-52;

col.13, lines 48-61).

Response to the argument

33.   Applicant arguments filed on 12/17/08 had been considered but they are not

persuasive. In the remarks applicant argued (1) Lim does not teach the checkpoint

segment is stored into the first local storage by an application and wherein the

checkpoint segment comprises a state of the application (2) Lim does not teaches a

checkpoint segment from a first local storage of a first node to at least one other node

and from that other node to the second node's local storage.

(3) Lim does not teach an application storing a checkpoint segment; replicating a

checkpoint segment from the first local storage of the first node to at least one other

node; and loading a copy of the replicated checkpoint segment from at least one other

node into a second local storage of a second node. (4) Lim does not explicitly teach

replicate a checkpoint segment from a first local storage of the first node to at least one

other node.

(4) Lim does not teach replicate a checkpoint segment from a first local storage of the

first node to at least one other node; an application executing on the first node, and

wherein the checkpoint segment comprises a state of the application; load a copy of the

replicated checkpoint segment from the at least one other node into a second local

storage of the second node.

34.   Examiner respectfully traverses Applicant's remarks:

As to point (1), Lim teaches the checkpoint segment is stored into the first local storage

by an application (each generated checkpoint is then stored in the checkpoint storage

portion by the virtual machine monitor, (col. 18, lines 5-8; col. 7, lines 1-5)and wherein

the checkpoint segment comprises a state of the application (each checkpoint

comprising a list of total state of the virtual machine, col. 6, lines 49-52; col. 12, lines 29-

32). The virtual machine is running directly on a virtual machine monitor (col. 17, lines

26-33); therefore, each checkpoint comprising a list of total state of the virtual machine

(col. 6, lines 49-52; col. 12, lines 29-32) which include the state of the virtual machine

monitor.

As to point (2), Lim teach a checkpoint segment from a first local storage of a first node

to at least one other node (a first virtual machine monitor may extract and transmit the

state vector (checkpoint) over to a second virtual machine monitor (col. 21, lines 54-

59) and from that other node to the second node's local storage (the second virtual

machine monitor that receives and restores the state vector into a second virtual

machine, col. 21, lines 59-61).

As to point (3) Lim teaches an application storing a checkpoint segment (each

generated checkpoint is then stored in the checkpoint storage portion by the virtual

machine monitor , col. 18, lines 5-8; col. 7, lines 1-5; the virtual machine is running

directly on a virtual machine monitor (col. 17, lines 26-33); therefore, each checkpoint

comprising a list of total state of the virtual machine (col. 6, lines 49-52; col. 12, lines 29-

32) which include the state of the virtual machine monitor) ; replicating a checkpoint

segment from the first local storage of the first node to at least one other node (a first

virtual machine monitor may extract and transmit the state vector (checkpoint) over to a

second virtual machine monitor (col. 21, lines 54-59)); and loading a copy of the

replicated checkpoint segment from at least one other node into a second local storage

of a second node (the second virtual machine monitor that receives and restores the

state vector into a second virtual machine, col. 21, lines 59-61).

As to point (4) Lim teach replicate a checkpoint segment from a first local storage of the

first node to at least one other node (each generated checkpoint is then stored in the

checkpoint storage portion by the virtual machine monitor , col. 18, lines 5-8; col. 7,

lines 1-5; a first virtual machine monitor may extract and transmit the state vector

(checkpoint) over to a second virtual machine monitor (col. 21, lines 54-59)); an

application executing on the first node (The virtual machine is running directly on a

virtual machine monitor (col. 17, lines 26-33)), and wherein the checkpoint segment

comprises a state of the application (each checkpoint comprising a list of total state of

the virtual machine, col. 6, lines 49-52; col. 12, lines 29-32); load a copy of the

replicated checkpoint segment from the at least one other node into a second local

storage of the second node (the second virtual machine monitor that receives and

restores the state vector into a second virtual machine, col. 21, lines 59-61.

35.   **THIS ACTION IS MADE FINAL**. Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to CAMQUY TRUONG whose telephone number is

(571)272-3773. The examiner can normally be reached on 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Meng Ai An can be reached on (703)305-9678. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

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system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/VAN H NGUYEN/   Camquy Truong
Primary Examiner, Art Unit 2194

                                                 March 27, 2009